REMARKS

Claims 9-28 are pending. The drawings are objected to for lack of element 20 in the specification. The specification is further objected to for a typographical error. Claims 11, 12, 15, 18, 19, 20, 24, 25, 26 and 27 were objected to. Claims 27 and 28 were rejected under 35 USC 112 first paragraph. Claims 12, 15, 16, 17, 18, 20, and 28 were rejected under 35 USC 112 second paragraph. Claims 9-14, 17, and 23-28 were rejected under 35 USC 102(b) as being anticipated by US patent 5,909,368 (Nixon et al.). Claims 15, 16, and 18-22 were rejected under 35 USC 103(a), as being unpatentable over Nixon in view of US patent 6,445,963 (Blevins et al.).

Claims 9, 11-17, and 19-28 are amended herein. Claim 18 is canceled. The claims are clarified in response to the objections and objections. No new matter is added, and the subject matter is not changed. Claims 9-17 and 19-28 are presented for examination in view of the following arguments.

Response to specification objection

In paragraph 19, line 6, the words "the parameters for the" were correctly interpreted in the published patent application 20070088518. An amendment of paragraph 19 is provided herein for the record.

Response to drawing objection

Reference number 20 has been added to paragraph 32, line 14 of the specification.

Replacement drawing sheets 2 and 3

Replacement drawing sheets 2 and 3 are provided for the following reasons:

FIG 2 shows a reference number 1 which should be reference number 17 as described in paragraph 31, line 6. Otherwise, reference number 17 does not appear in the drawings. FIG 2 is noted as prior art, per paragraph 28, lines 1-2.

Reference number 8 is added to FIGs 2, 3, and 4 to show the microprocessor in the field device 2 as described throughout the specification and abstract. For example in paragraph 2: "each of the field devices incorporates control equipment with at least one microprocessor, with at least one electronic storage means and with data input and output means for communications with the control unit." Paragraph 31, line 4 is amended accordingly: "the microprocessor 8 of the field device 2".

Reference number 18 (storage module or mechanism) is added to FIGs 3 and 4 as supported in the quote above. This amendment consistently shows reference numbers 8 and 18 in FIGs 2, 3, and 4 helps clarify the term "control equipment" as defined in the quote above.

Reference number 11 is added to FIG 4 for consistency with FIGs 2 and 3.

No new matter is added by these amendments.

Response to claim objections

The claims have been amended responsive to the objections. The word "mechanism" is added to "electronic storage mechanism" in claim 9, line 8, to correct claims 12 and 24. Note that the term "control equipment" is introduced and defined in the preamble of claim 25.

Response to rejections under 35 USC 112

Claim 28 is amended so that a first and second analysis facility is introduced in lines 9 and 11 respectively. These facilities are described in paragraph 37, lines 4-8, and are shown in FIG 6 as elements 31 and 32.

The rejections under 35 USC 112 second paragraph are addressed herein as best understood. Claims 9-28 were listed as rejected, but reasons for the rejections were only given for claims 12, 15, 16, 17, 18, 20, and 28. There is no term "the storage" in claim 12 line 2, so this rejection is unclear.

Response to rejections under 35 USC 102

The present invention automatically generates program modules for controlling field devices, while Nixon does not. In Nixon, program modules are originally provided by a system designer or manufacturer. The user can assemble, modify, or create modules to build a control strategy, but this is not automatic: "A user defines the control strategy by building a plurality of function blocks and control modules" (col. 4, lines 45- 46). Examiner notes that Nixon's field bus devices automatically perform (execute) downloaded portions (software modules) of the control strategy. However, executing modules is not the same as automatically generating those modules, as is done in Applicant's method.

Examiner refers to Nixon columns 13-14, lines 43-67 and 1-7 respectively (regarding FIG 4) as teaching a method for generating program modules. FIG 4 is a schematic model of a plant configuration, not a method for generating program modules. It is a generalized way of representing a plant such as that of FIG 1A or 1B. This would correspond to Applicants' FIG 1. Contrast this with Applicants' FIGs 3-9, which show how to generate program modules automatically by means of a machine-readable parameterized description of the field devices using a format such as Device Description Language (DDL).

Examiner interprets Applicants' element 15 of FIG 3 as a machine readable parameterized description. This is incorrect. Element 15 is a human-readable textual description that must be converted into a machine-readable description 13 such as DDL by human interpretation (par. 29, lines 7-20, and par. 30, lines 1-7). In the prior method of FIG 2, the textual description 15 is also separately converted 19 to program modules 11 in the field device 2 by custom human programming (par. 32, lines 1-2). Both of these human interpretation/conversion steps are subject to human error, and especially to inconsistencies between the two human interpretations 16 and 19 (par. 32, last 3 lines). Inconsistencies are eliminated in Applicants' FIG 3 by doing only one human conversion step 16 into a machine-readable description 13. Human conversion

is eliminated entirely in FIG 4 when the developer of the field device originally provides a machine-readable description 13, rather than a human-readable textual description 15.

Examiner states that "spec. is not clear what the control equipment is". In Applicants' paragraph 2: "each of the field devices incorporates control equipment with at least one microprocessor, with at least one electronic storage means and with data input and output means for communications with the control unit." Clarification is made to the claims and drawings herein. In Nixon, col. 16, lines 33-36: "Devices 552 are process control equipment in the configuration architecture 500 and include objects such as controllers, input/output devices, consoles and the like." So the term "control equipment" has a different meaning in Nixon and Applicants' specifications.

In Applicants' FIGs 3, 4, and 5, program modules 11 (also called "firmware") in the field device 2 are automatically generated 21 in the field device from a machine-readable parameterized description 13.

> Applicants' par. 33: "By contrast, the invention proposes a method by which the firmware 11 which is to be newly created is generated directly from the machine-readable parameterized description 13 which is in any case available. This is represented in diagrammatic form in FIG. 3. In this way, it is possible to forgo the interpretation and software generation step 19. Its place is taken by the automatic program generation 21, which starts from the machine-readable description. In this way, inconsistencies between the different program modules become impossible in principle, because the firmware 11 is of necessity based on the same data set as that which underlies the parameterized description which is used on the control computer. A side effect which also results is the exceptionally fast and reliable nature of program generation for the firmware 11, because the method is automatic and calls for no manual programming activities."

In FIG 3, the machine-readable description 13 can be transmitted to the field device 2 from a control unit 6, after being manually converted 16 and input into the control unit 6 from a textual description 15. However, this is not necessary in FIG 4, in which the machine-readable description 13 is input directly 21 into the field device. An advantage of the embodiment of FIG 4 is that programming of the field device can be done independently of the control unit, such as when a control unit 6 is not available, while still maintaining full consistency between the program modules in the field device 2 and those in the control unit 6. In either case (FIG 3 or FIG 4), program modules for the field device are automatically generated in the field device 2, rather than in the control unit 6.

In Nixon FIG 1B, the program modules for intermediate controllers 4 and intelligent field devices 6 are assembled or generated in a personal computer 2, then downloaded to intermediate controllers 4, and finally to intelligent field devices 6. They are not generated in the field devices 6 themselves as in Applicants' invention. Since Nixon does not teach this aspect of the invention as claimed, the 102 rejections are not supported.

Response to rejections under 35 USC 103

The proposed combination with Blevins does not fill the above deficiencies of Nixon as to the independent claims. The dependent claims should be allowed as containing all the limitations of a respective allowable base claim.

Conclusion

For anticipation under 35 USC 102, a reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present (MPEP 706.02(a) IV). The identical invention must be shown in as complete detail as recited in the claim, and the elements must be arranged as required by the claim (MPEP §2131). These criteria are not met by Nixon as to the independent claims, as argued above. Blevins does not fill deficiencies of Nixon as to the independent claims. Accordingly, Applicants request withdrawal of the 35 USC 102 and 103 rejections. The dependent claims should be allowable as including the limitations of an allowable base claim. The formal objections and rejections have been addressed. Therefore Applicants feel this application is in condition for allowance, which is respectfully requested.

The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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